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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/967,098	09/28/2001	James O. Hansen	01-235	7571

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EXAMINER

ALANKO, ANITA KAREN

ART UNIT PAPER NUMBER

1765

DATE MAILED: 03/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/967,098	HANSEN ET AL.	
	Examiner	Art Unit	
	Anita K Alanko	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/7/04 *amdt*
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Election/Restrictions

Applicant's election without traverse of Group I in the Paper filed on 1/7/04 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5-8 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Roni (US 3,844,859).

Roni discloses a process for chemically milling a metal part without causing significant intergranular attack comprising the steps of:

preparing a milling solution containing nitric acid, hydrofluoric acid, dissolved titanium (see figure), a wetting agent, and water (col.3, line 20-col.4, line 8);

maintaining said milling solution at a temperature in the range of from about 110 to 130 °F (col.3, line 41); and

immersing said metal part into said milling solution for a time sufficient to mill a desired depth on at least one surface of said part (col.4, lines 1-2).

As to claim 2, Roni discloses to add surfactant such that the milling solution has a surface tension of from about 30 dynes/cm² to about 35 dynes/cm² (col.2, lines 9-12), and up to 60 dynes/cm² (col.3, lines 20-25), which overlaps with the range cited.

As to claims 5-8, Roni discloses a range of concentrations of the dissolved titanium (see figure) which is expected to encompass the cited ranges.

As to claim 15, Roni discloses to maintain said solution in the range including 115 to about 125 °F (col.3, line 41).

Claims 1, 10-12 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Coggins et al (US 3,944,496).

Coggins discloses a method for chemically milling a metal part comprising the steps of: preparing a milling solution containing nitric acid, hydrofluoric acid, dissolved titanium, a wetting agent and water (col.3, lines 32-38);

maintaining said milling solution at a temperature in the range of from 110 to 130 °F (col.6, lines 40-41); and

immersing said metal part ("specimen") into said milling solution for a time sufficient to mill a desired depth on at least one surface of said part (col.3, lines 39-42).

As to claim 10, Coggins discloses that said part is formed from a titanium alloy (col.2, line 51).

As to claims 11-12, Coggins discloses that at least one material, urea, may be adding to increase the mill rate, for example urea at an amount greater than 20 grams per liter (col.2, line 4).

As to claim 15, Coggins discloses to maintain the solution at a temperature in the range of 115 to 125°F (col.6, lines 40-41).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-8, 10-11, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adinolfi et al (US 4,563,239) in view of Hodgens, II et al (US 5,217,569).

As to claims 1 and 15, Adinolfi discloses a process for chemically milling a metal part without causing significant intergranular attack comprising the steps of:

preparing a milling solution containing nitric acid, hydrofluoric acid, dissolved titanium (inherent since titanium is etched and goes into solution as it is etched), a wetting agent, and water (col.3, lines 1-3);

maintaining said milling solution at a temperature in the range of from about 70-90 °F (col.3, line 8); and

immersing said metal part into said milling solution for a time sufficient to mill a desired depth on at least one surface of said part (col.3, lines 24-39).

Adinolfi does not disclose to maintain the milling solution at a temperature in the range of from about 110 to about 130 °F. Hodgens teaches that the temperature of a chemical milling solution is a result effective variable, i.e., the temperature affects the rate of metal removal during the etching of metals with acid etchants (col.1, lines 60-68). Hodgens also teaches that a useful temperature for etching metal parts includes 115 °F (col.5, lines 51-53), and that the range of useful temperatures depends on the concentration of the etchant. It would have been obvious

to one with ordinary skill in the art to vary the temperature in the method of Adinolfi to include 110 to about 130 °F because Hodgens teaches that the optimum temperature depends on the concentration and because the temperature appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

As to claims 3-4, Adinolfi discloses concentrations within the cited ranges (col.3, lines 1-2).

As to claims 5-8, the cited concentrations are inherent in the method of Adinolfi because titanium goes into solution as it is etched. It would have been obvious to maintain the solutions at the cited concentrations in the method of Adinolfi because the amount of titanium loading in the solution depends on the concentration of the etchants.

As to claim 10, Adinoldi discloses that the part is formed from a titanium alloy (col.2, lines 54-56).

As to claims 11, 13-14, Adinolfi does not disclose to add palladium. Hodgens teaches that it is useful to add dissolved palladium to titanium alloy etchants to reduce hydrogen absorption (col.4, lines 24-32). It would have been obvious to one with ordinary skill in the art to add palladium to the etchant in the method of Adinolfi because Hodges teaches that this is useful to reduce hydrogen absorption.

Hodgens teaches that a concentration of palladium includes 5.64 mmol/liter of acid solution (Table III) and that the amount of palladium is a result effective variable because varying the amount of palladium changes the amount of hydrogen absorbed (Table IV). It would have been still further obvious to add palladium in the concentrations cited because the amount

of palladium added appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

Claims 1-11, 13-15 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adinolfi et al (US 4,563,239) in view of Hodgens, II et al (US 5,217,569) and Nelson (US 4,556,449).

The discussion of modified Adinolfi from above is repeated here.

As to claims 2, 9 and 29, Adinolfi does not disclose to add fluorosurfactant. Nelson teaches that adding fluorosurfactant to metal etchants is useful (examples 3 and 4) in order to provide for more uniform etching (col.3, lines 26-34). It would have been obvious to one with ordinary skill in the art to add fluorosurfactant to the method of Adinolfi because Nelson teaches that it helps provide for more uniform etching. The modified method of Adinolfi would have the cited surface tensions as a result of adding the fluorosurfactant because since the same composition is present, then the same result of surface tension is expected.

Claims 1, 3-8, 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adinolfi et al (US 4,563,239) in view of Hodgens, II et al (US 5,217,569) and Gulla (US 3,936,316).

The discussion of modified Adinolfi from above is repeated here.

As to claim 12, Adinolfi does not disclose to add urea. Gulla teaches that adding urea to metal etchants is useful in order to reduce fuming and decrease consumption of acids during etching (col.2, lines 46-52). The amount is greater than 20 grams per liter (example, col.5).

Urea also helps reduce pitting (col.2, lines 64-66). It would have been obvious to one with ordinary skill in the art to add urea to the method of Adinolfi because Gulla teaches that it helps reduce fuming, reduce consumption of the acid during etching, and reduce pitting. It would have been obvious to use the cited concentration of urea in the modified method of Adinolfi because the amount is dependent on the concentration and composition of the etchant, and it appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

Claims 1-2, 5-12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coggins et al (US 3,944,496).

The discussion of Coggins from above is repeated here.

As to claim 2, Coggins discloses a higher surface tension of about 45-60 dynes/cm² (col.2, lines 38-39). It would have been obvious to maintain a lower surface as cited in claim 2 in the method of Coggins because the surface tension appears to reflect a result-effective variable, which can be optimized. See MPEP 2144.05 IIB.

As to claims 5-8, Coggins discloses that the titanium is dissolved into the solution at 6 or 50 g/L (col.2, line 9; col.3, line 36). It is unclear how these concentrations correspond to the claimed concentrations. However, it would have been obvious to have the cited concentration in the method of Coggins because the amount of titanium appears to reflect a result-effective variable, which can be optimized. See MPEP 2144.05 IIB.

As to claim 9, Coggins discloses to add a surfactant (col.5, lines 61-62), but does not disclose to add a fluorosurfactant. It would have been obvious to one with ordinary skill in the

art to use a fluorosurfactant in the method of Coggins because they are well known, useful surfactants.

Claims 1-2 and 5-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coggins et al (US 3,944,496) in view of Hodgens, II et al (US 5,217,569).

The discussion of modified Coggins from above is repeated here.

As to claims 13-14, Coggins does not disclose to add palladium. Hodgens teaches that it is useful to add dissolved palladium to titanium alloy etchants to reduce hydrogen absorption (col.4, lines 24-32). It would have been obvious to one with ordinary skill in the art to add palladium to the etchant in the method of Coggins because Hodges teaches that this is useful to reduce hydrogen absorption.

Hodgens teaches that a concentration of palladium includes 5.64 mmol/liter of acid solution (Table III) and that the amount of palladium is a result effective variable because varying the amount of palladium changes the amount of hydrogen absorbed (Table IV). It would have been still further obvious to add palladium in the concentrations cited because the amount of palladium added appears to reflect a result-effective variable which can be optimized. See MPEP 2144.05 IIB.

Response to Amendment

The 35 USC 112 rejection is withdrawn. The claims remain rejected over Roni or various combinations Adinolfi. The claims are also rejected over Coggins. Coggins discloses dissolving titanium in a milling solution prior to milling.

Response to Arguments

Applicant's arguments filed 1/7/04 have been fully considered but they are not persuasive. Applicant argues that the prior art does not cite to prepare a solution and then to immerse the metal in the solution. However, these arguments are not commensurate in scope with the claim language. These arguments would be persuasive if the independent claims cited that the steps are in a particular order, for example by inserting "thereafter" on line 4 of claim 1. The claims have open "comprising" language that encompasses preparing the etchant solution during etching.

The claims are also rejected over Coggins, as discussed above. Claims 3-4 are however, allowable over Coggins because there is no motivation to change the ratio of the etchant composition to that cited in the claims because of the different effect that it would/could have on the properties of the etch.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon, Tues & Fri: 8:30 am-5 pm; Wed & Thurs: 10 am-2 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Anita K. Alanko

Anita K Alanko
Primary Examiner
Art Unit 1765